

Integrated Geological Map Database and Geological Information Index

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INTRODUCTION TO GeoMapDB AND G-Index IN JAPAN

Geological Survey of Japan (GSJ), a branch of the National Institute of Advanced Industrial Science and Technology (AIST), recently began offering geologic information in digital format to the general public through the internet and CD-ROM. To provide easy access to the data, GSJ has been developing a digital geologic database and geologic information index. GSJ completed the construction of the database and the index system in 2006, and it was opened to the general public soon thereafter. This paper describes the database and the index system.

INTEGRATED GEOLOGICAL MAP DATABASE (GeoMapDB)

Geological Survey of Japan, AIST recently developed the Integrated Geological Map Database, called GeoMapDB. The database was launched online on September 29, 2006. The URL is <http://iggis1.muse.aist.go.jp/en/top.htm>. The design of this database aims to make many kinds of geological maps published by GSJ easily accessible to the general public.

GeoMapDB database is based on WebGIS (ArcIMS) technology, and will include most of the geological maps and related geoinformation produced and compiled by the Geological Survey of Japan (Figure 1). However, it is presently still in the initial stages of development. The current contents of the database include the geologic maps of Japan at 1:2,000,000, 1:1,000,000, 1:200,000, 1:50,000 and 1:25,000 scales.

At the GeoMapDB home page, you view the entire map of Japan and select the area you want to view. The system then zooms into your selected area and displays the selected geological maps of Japan, which is the essential data in the GeoMapDB database (Figure 2). From this point, you can choose the maps and data you want to view, by clicking the boxes in the right side column. For each map, you can select the degree of transparency and the presence or absence of text. If you are visiting the site for the first time, the help page is very useful. You can choose the maps by checking the visible boxes and change the transparency and the text information by checking the active boxes in the layer-control column.

Useful search tools and 3D display are also available from function buttons above the map. The processes require the user to have a VRML plug-in for viewing 3D WebGIS. You can

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create the Bird's-eye view using digital geologic map and digital elevation model (DEM) (Figure 3). If you download the semi-transparent geologic map data from the site, you can easily display the map in Google Earth.

GEOLOGICAL INFORMATION INDEX (G-Index)

Geological Survey of Japan, AIST has been developing a geologic information system since 2002. The system, called G-Index, was finalized and launched online in 2006. The G-Index URL is http://www.aist.go.jp/RIODB/GINDEX/GSJ_E/index.html (see Figure 4). The system combines various types of geologic information employing G-XML (Japanese Industrial Standard, JIS X 7199, <http://www.jisc.go.jp/eng/>) as its base and operates WebGIS.

G-XML is a format conforming to XML to handle geographic information. G-XML is developed as a new universally applicable format using XML technique. Data such as GIS contents and digital maps described in XML would become accessible and exchangeable. G-XML will be merged with GML as a single universal format in the near future.

For the current version of G-Index, we prepared geologic maps at the scales of 1:50,000, 1:200,000, 1:1,000,000, and 2,000,000, an environmental geologic map, marine geologic map, sedimentological map, geothermal resources map, geothermal gradient and heat flow data, and gravity map and gravity data in G-XML format. At the moment, the system is to be used to browse and view major published geologic data. However, in the near future, we intend to include data download and analysis capabilities. A dynamic linkage to other databases would also be established. We prepared several software tools to exchange data format from CSV to G-XML, G-XML to JKG, and viewer program for JKG format.

SUMMARY

Geological Survey of Japan, AIST, has just started web-based services to provide digital geologic map data and other geological information produced by the survey. We started to convert the data to fit with the international standards to distribute them all over the world. For this purpose, Geological Survey of Japan, AIST will take the OGC and CGI activities into account for the interoperability of geoinformation.

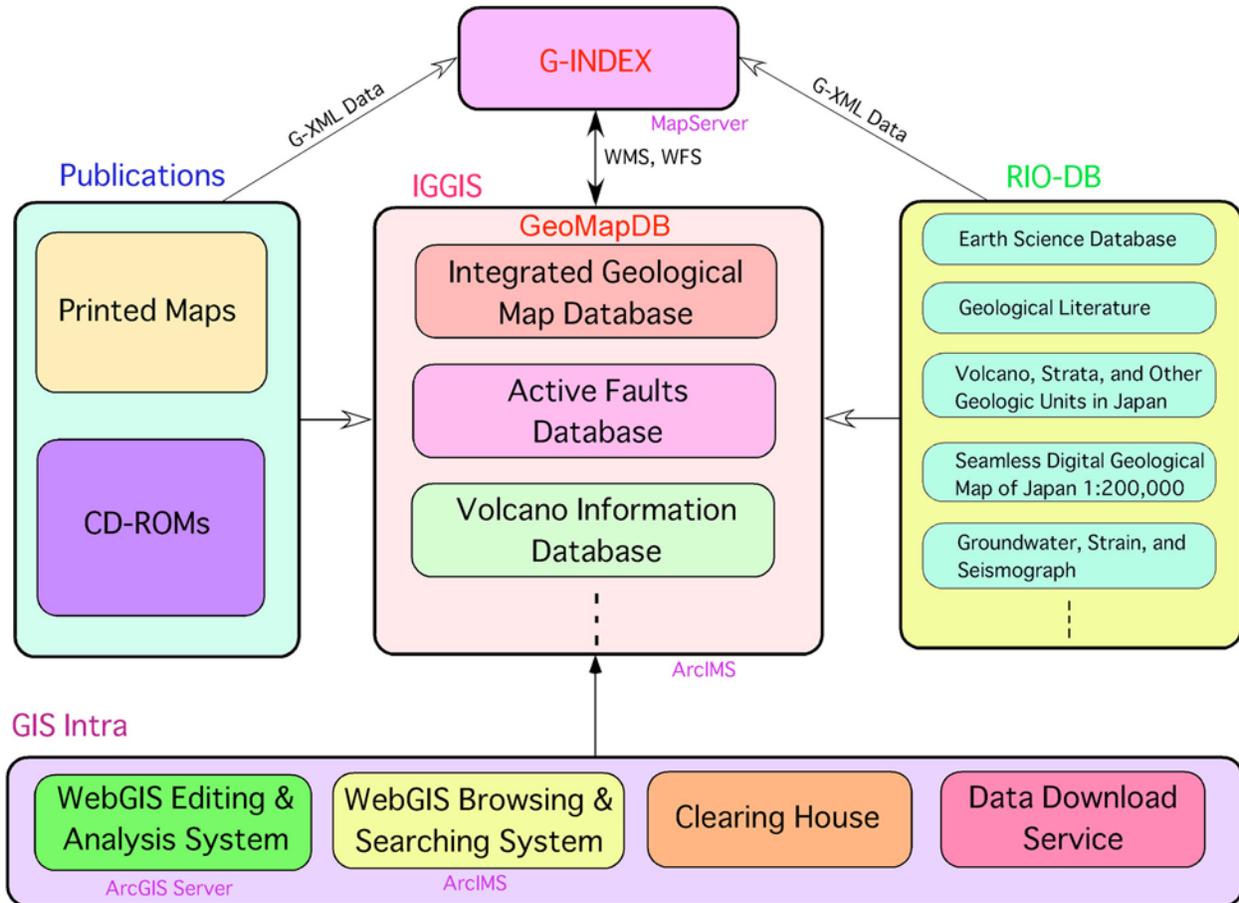


Figure 1. Overall geoinformation system of the Geological Survey of Japan, AIST. IGGIS – Platform of the GeoMapDB. GIS Intra – Intra sharing server system based on Arc GIS Server. RIO-DB – Research Information Database.

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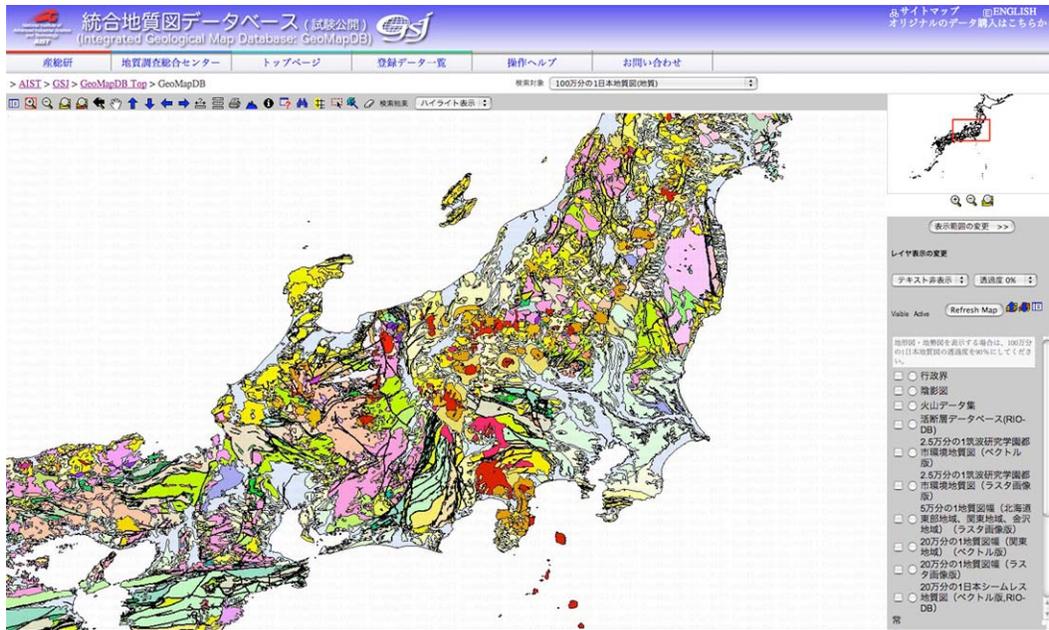


Figure 2. Example of the geological map view of GeoMapDB.

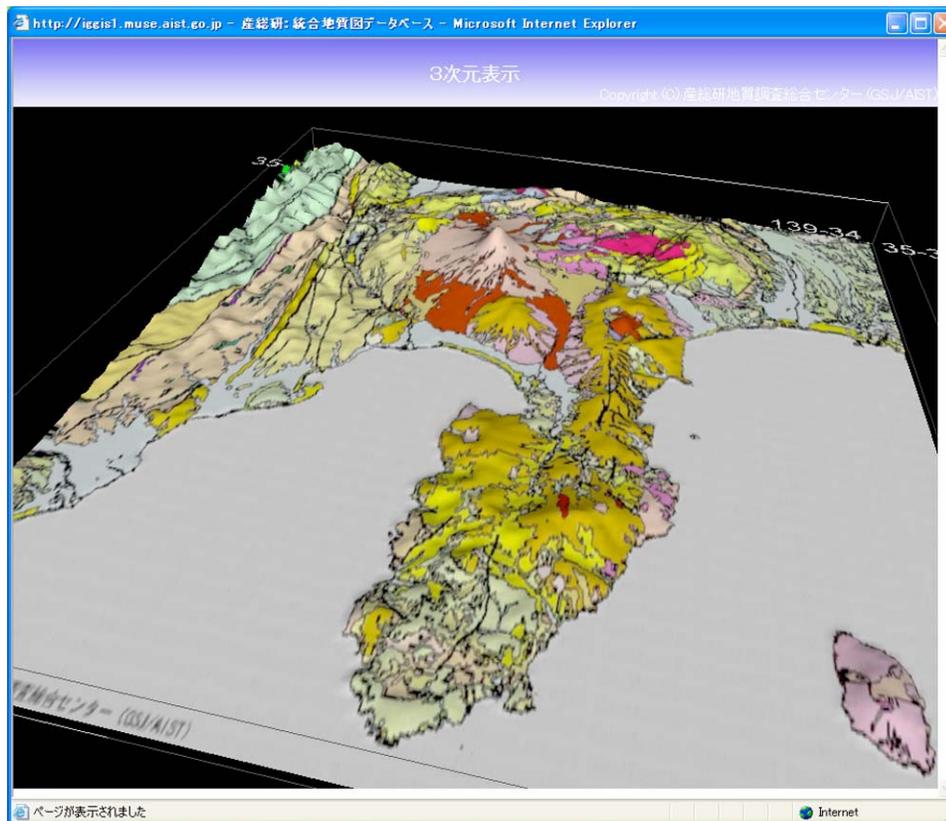


Figure 3. Bird's-eye view of Izu Peninsula using digital geologic map and DEM of GeoMapDB.

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The screenshot shows the top page of the G-INDEX website. At the top left is the logo of the Agency for International Geoscience and Earth-Resource Information Systems (AIST). The main header reads "G-INDEX Geological Information Index in Southeast Asia". Below the header, there are two search buttons: "Search on Map" and "Search by Text". A vertical navigation menu on the left contains links for "About G-INDEX", "Database List", "What is G-XML?", "Download DTD", "Tools", "Help", and "HOME". A language selector shows "日本語" and "ENGLISH". At the bottom of the menu is a "004070" code. The main content area features a map of Southeast Asia with the title "Geological Information Index in Southeast Asia". Below the map, there is a "What's New" section with two entries: "2006.6.8 3D Plugin 'blaxxun Contact' is supported !" and "2006.3.9 G-INDEX is opened !!". A paragraph of text describes the database system as being developed by the Geological Survey of Japan (GSJ). A note at the bottom left of the main content area says "If you come here first time, please read Help page."

Figure 4. Top page of the G-Index.